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ANALYSIS OF HOUSEHOLD CONSUMPTION PATTERNS IN PAKISTAN

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Introduction

In a developing country like Pakistan, with the growth of income, consumption patterns are expected to undergo a significant change over time. Therefore, a knowledge of changes in consumption pattern is a pre-requisite to plan output in order to avoid shortages or excess capacity in production. Consequently, there is a need to explore determinants of consumption patterns and to estimate various parameters in the consumption functions for various commodities.

More than one hundred years ago, Engel [21] found that with an increase in income, the proportion of expenditure decreases on food, remains constant on clothing, fuel and lighting and increases on miscellaneous items. A number of other studies, both for developed and developing countries, have confirmed Engel's conclusions. For example, see Aziz-ur-Rehman [1], Bussink [4], Gustav Ranis [17], Islam [9], Khan [11, 12], Crammer [5], Houthakkar [7], Humphery [8], Stone [19] and Sinha [20].

We may note that income, though the most important factor, is not the only factor which affect the consumption patterns. The other variables include the distribution of income, level and distribution of assets, size and composition of households, number of earners per household, prices, structural, geographical, climatic differences etc. However, most of the studies exclude other variables and focus on just income and household size. Sinha and Hay's study [20] of the Indian industrial workers is the only exception which considers fourteen explanatory variables which among others include income, household size, number of earners per family, permanence of employment and urban residence, sex, religion, etc. However, for each product they found income and household size to be the only significant

variables. For Pakistan, data on other variables are not available, and as such we are constrained to analyse consumption patterns in terms of only these two variables. However, since Sinha and Hay [20] have found other variables to be insignificant, exclusion of these variables are not expected to affect the results significantly.

Growth of the economy generally, is accompanied by an increase in industrialization and urbanization. Consumption pattern of rural areas show marked differences from those of urban areas and as such consumption pattern of a country will be significantly affected by changes in the degree of urbanization in a country. Therefore, we shall estimate consumption functions for both the urban and the rural areas in the present study.

There have been some studies on the consumption pattern of Pakistan, viz. Aziz-ur-Rehman's [1], Bussink [4], Gustav Ranis [17] and Khan [12]. However, these studies are outdated as they pertain to the early Sixties and as such there is a need of a study for a more recent year. Even more importantly earlier studies used either per capita income or expenditure as the explanatory variables and we have explained variations in consumption in terms of expenditure and household size.

The study is organized in the following way. In the first section, methodology and data problems are discussed. In section II, we present results and compare them with those of the earlier studies. In the third section, we present policy implications and demand projections. Finally, in the fourth section, we present the conclusions.

1. *Methodological and Data Problems*

In this study we estimate relationships between consumption expenditure on a product to total expenditure, household size and number of earners. It can be argued that we should use income instead of total expenditure as one of the explanatory variables. However, income data generally suffers from measurement errors and therefore, total expenditure will reflect changes in permanent income better than does the current income.

As regards household size and number of earners, unfortunately we cannot introduce them simultaneously in the relationship because of high multicollinearity between them[1]. Since household size is expected to affect consumption directly, we have dropped the number of earners variable We have estimated two functional forms, viz. linear and log-linear form, to analyse consumption behaviour. In order to see which form is preferable we used Box - Cox test, i.e. residual sum of squares of which form are minimum after adjusting the dependent variable for differences in the unit of measurement. Since log-linear form turned out to be better, this has been used in the present study.

In order to test the homogeniety of consumption pattern for rural and urban areas and to test for stability of the parameters, we have used "covariance Analysis".

Data Problems

We have used "Household Income and Expenditure Survey" data for analysing the consumption behaviour. Although the study is primarily rela-

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[1] We have used Farrar and Glauber test to detect multicollinearity.

ted to 1971-72, the latest year for which these data are available, in order to test stability of consumption behaviour over time we have used data of past three years as well, viz. 1968/69, 1969/70 and 1970/71.

Survey reports provide data by income groups. Since the number of households in each group is not the same, OLS estimates will be biased. Therefore, we used GLS. To test for stability of consumption behaviour, we have pooled cross-section data of different time periods (1968/69, 1969/70, 1970/71, 1971/72). We have deflated data for different years by Consumer Price Index (CPI) in order to rule out the effect of changes in prices of different consumption items and to see whether consumption expenditure on any commodity group has changed overtime in real terms or not in response to changes in real total expenditure of household. The data used in the study are at constant prices of 1971-72.

Consumer Price Index (CPI) required for coversion are available only for four broad expenditure groups, viz. total food, clothing and footwear, housing, miscellaneous and also general price index for consumers.

These price indices are neither available for all occupational groups combined (Industrial, Clerical workers and Government employees) for the years prior to 1969-70, nor for all sub-food groups, like cereals, pulses and others, for all three previous years. To construct combined CPI (for all occupational groups) we have calculated weights for these occupational groups using data for the years following 1969-70. Applying these weights we construct consumer price indices for the four broad expenditure groups (food, clothing and footwear, housing and miscellaneous) and the general consumer price index.

We have constructed CPI for different sub-food groups for all the three years 1968/69 to 1970/71) by using survey data. Each sub-food group includes expenditure on different items e.g. cereals include wheat, rice and "other" and "others" include maize, barley and millet. But the weights of these items in "others" are not known so we have used price and quantity information of wheat and rice to construct price index for cereals. Because of the non-availability of weights of different products in the "others" the results may be biased. However, the bias is not expected to be large, because percentage of expenditure of various products in this group is quite low.

II. Results

We have distinguished five broad commodity groups, viz. food, clothing and footwear, fuel and lighting, housing and miscellaneous. Food is further sub-divided into seven groups, viz. cereals, pulses milk and milk products, vegetables, meat, fish, poultry, edible oil, and tea. Food is sub-divided in groups because approximately 50% to 60% of total expenditure is spent on it in urban and rural sectors respectively, while percentage of total expenditure spent on any other commodity group does not exceed 22% and 19% in either urban or rural areas, as may be seen from table 1.

Percentage Distribution of Expenditure on
Commodity Groups

Commodity Groups	%age of total expenditure	
	Urban	Rural
Cereals (Y_1)	12.36	20.81
Pulses (Y_2)	1.41	1.90
Milk and milk products (Y_3)	8.66	15.18
Vegetables (Y_4)	3.93	3.80
Meat, fish, poultry (Y_5)	4.94	3.22
Edible oil (Y_6)	4.07	1.84
Tea (Y_7)	1.36	1.27
Sub-total:	36.75	48.02
Total food expenditure (Y_8)	48.40	57.34
Clothing (Y_9)	9.53	10.97
Fuel and lighting (Y_{10})	5.11	5.39
Housing (Y_{11})	12.80	6.58
Miscellaneous (Y_{12})	21.99	19.15
Total:	97.83	99.43

Note: These totals do not add upto 100 percent because taxes, remittances to household members living away and personal effects are not included here.

As mentioned above, percentage of expenditure spent on food is very high in rural areas as compared to urban areas. For other commodity groups, viz. clothing, fuel and lighting and miscellaneous, the difference in urban and rural areas is not very large. However, expenditure on housing in urban areas exceed significantly that in the rural areas, i.e. 12.8% in urban areas compared to 6.58% in rural areas, which is almost double the expenditure in rural areas. Within the sub-groups of food, expenditure patterns differ significantly in case of cereals milk and milk products and edible oil. This may be due to the differences in income levels or preferences in the two years. A priori we expect that both expenditure and household size elasticities should be between zero and one for the necessities, expenditure elasticity should be at least equal to unity and household size elasticity should range between zero and one for the comforts and expenditure elasticity should exceed

unity and house hold size elasticity should be negative for the luxuries. In the following analysis, these a priori considerations should be borne in mind.

Urban Consumption Patterns

Detailed estimates of urban consumption functions are reported in table I in Appendix, but the elasticity estimates obtained from both linear and log-linear relations are reported in table II below:

Table II

Elasticity Estimates for Urban Areas (1971-72)

Commodity Groups	Linear Form		Log-Linear Form	
	E_1 (Expenditure Elasticity)	E_2 (Household size Elasticity)	E_1 (Expenditure Elasticity)	E_2 (Household size Elasticity)
Cereals	0.072*	1.033*	0.16*	0.857*
Pulses	0.016*	1.059*	0.129*	0.957*
Milk & milk products	0.498*	0.983*	0.608*	0.855*
Vegetables	0.316*	0.903*	0.425*	0.773*
Meat, fish, poultry	1.236*	0.08*	1.048*	0.623*
Edible oil	0.2104*	1.044*	0.332*	0.853*
Tea	0.662*	0.639*	0.737*	0.561*
Total food expenditure	0.51*	0.703*	0.651*	0.733
Clothing	0.623*	0.611*	0.787*	0.777*
Fuel and lighting	0.424*	0.627*	0.603*	0.781*
Housing	1.616*	-0.975*	1.429*	-0.666*
Miscellaneous	2.053*	-1.46*	1.41*	-0.0742

*Estimated coefficients are significant at 0.05% & at 0.01%.

Estimates of consumption functions for both linear and log-linear relation are statistically significant. Since log-linear relationship turns out to be more appropriate for analysing consumption behaviour of urban households, we have discussed only log-linear estimates in detail.

Table II shows that elasticities of food, fuel and lighting and clothing are less than unity for both expenditure and household size, the elasticities

of housing and miscellaneous exceed unity for total expenditure and are negative for changes in the household size. It may further be noted that expenditure elasticity for all the food products is not necessarily below unity. For meat, fish and poultry, it exceeds unity. Moreover, important to note is that expenditure elasticities for fuel and lighting and clothing falls short of unity, which is contradictory to Engel's law. Though for housing and miscellaneous[2] expenditure elasticities do exceed unity but the expenditure elasticities are quite high. Higher housing elasticity may be due to shift from low rent houses to high rent houses and expenditure on furniture and fixture due to demonstration effects in consumption. As regards the very higher elasticities of miscellaneous goods, it is due to the fact that the group includes mostly luxury goods.

We may note that in all those cases where expenditure elasticities are low, the household size elasticities are quite high. On the other hand, household elasticities are quite low, even negative, in case of luxury goods for which expenditure elasticities are quite high.

Rural Consumption Patterns

Detailed estimates of rural consumption functions are reported in table II of Appendix[3] and the elasticity estimates from linear and log-linear forms are reported in table III below.

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[2]In "miscellaneous" following expenditures are included: Expenditure on personal care, medical care, education, goods and services relating to recreation and reading, telegraphic and telephone, postage, stationary, domestic help, gifts and charity, goods and services relating to travelling transportation, laundry and cleaning and other items.

[3]Test for heteroscedasticity for each and every commodity group (for both urban and rural areas) shows that X_2 causes the problem for vegetables and for rural areas only. So rural consumption function for vegetables is estimated after making required transformation.

^ Table III

Elasticity Estimates for Rural Areas (1971-72)

Commodity Groups	Linear Form		Log-Linear Form	
	E_1 (total expenditure Elasticity	E_2 (household size Elasticity	E_1 (total expenditure Elasticity	E_2 (household size Elasticity
Cereals	0.353*	0.667*	0.569*	0.327**
Pulses	0.239*	0.738*	0.374**	0.546
Milk and milk products	0.519*	1.042*	0.49**	1.197*
Vegetables	0.121**	1.129**	0.356**	0.622*
Meat, fish, poultry	1.861*	-0.903**	1.182*	0.1675
Edible oil	0.668*	-0.58**	0.552	-0.40**
Tea	1.080*	-0.0871	0.835**	0.353
Total food expenditure	0.583*	0.565*	0.705*	0.376*
Clothing	0.843*	0.1452*	0.944*	-0.04
Fuel and lighting	0.549*	0.174	0.64*	0.06
Housing	2.625*	-2.864**	1.267*	-0.581
Miscellaneous	1.8341*	-0.82**	1.471*	-0.211

*Coefficients are significant at 0.05% and at 0.01%.
**Coefficients are significant at 0.05% but not at 0.01%

The coefficients are highly significant for most of the commodity groups. As in the urban sector, log-linear relation turns out to be better for rural sector as well. Therefore, we focus on log-linear relation only.

Both the expenditure and household size elasticities of food, fuel and lighting are less than unity, while the expenditure elasticity of clothing is unity the household size elasticity is negative. Expenditure elasticity of housing and miscellaneous exceeds unity but the household size elasticity is negative.

As was the case in urban areas, expenditure elasticity for meat, fish, poultry exceeds unity. These products are considered superior and that is reflected in higher expenditure elasticity. Household size elasticities, as in the urban areas, are higher for food than for the other goods. There are two products for which estimates of household size elasticity deserve attention.

Household size elasticity for milk and milk products exceed unity but it is negative for edible oils. This is simply due to the preference of rural households for Desi-ghee and butter, which are milk products and are also domestically available in rural areas.

Differences in Urban-Rural Consumption Patterns 1971-72

Consumption behaviour of an urban household is expected to be considerably different from consumption behaviour of a rural household as income level and needs are different in the two areas and there also exist considerable taste, structural and cultural differences between the two areas. When we compare the elasticity estimates of the two areas, although the elasticity estimates for necessities and luxuries remain in the required range except for edible oil and clothing, there is no general correspondence either in terms of absolute magnitude of elasticities or in their ranking for different commodity groups. To test whether the consumption behaviour of rural and urban areas are similar or not, we have used covariance analysis. Covariance analysis reported in Appendix table III shows that except for cereals and edible oils differences in elasticities for rural and urban areas are not statistically significant. In case of cereals, the differences may arise due to the differences in preferences. On the average cereals account for 36.2% of total food expenditure in rural areas and for 25.5% of total food expenditure in the urban areas. Moreover, while maize, millet and barley are consumed in significant amount in rural areas, consumption of these products is negligible in the urban areas. The negative household size elasticity for edible oils in the rural areas as explained in the previous section is due to the differences in tastes of the two areas.

In view of the results discussed above, we come to the conclusion that slopes are homogeneous for all commodity groups except for cereals and edible oils. However, there are significant differences in the intercepts in case of all products except for total food and pulses. (See Appendix table IV). Therefore, pooling of urban-rural data to get consumption functions (for all commodity groups) for Pakistan would lead to misleading conclusions and to inaccurate demand projections.

Test for Stability in Consumption Behaviour (1968/69 - 1971-72)

In order to project demand for various products and to formulate policies, on the basis of consumption behaviour of households, we have to examine stability of the consumption functions. Results for both rural and urban areas are reported in Appendix from table V to table VIII.

For urban areas the estimates of slopes do not show any significant change over time except in case of cereals, tea and miscellaneous[4]. Similarly, for rural areas, generally slopes do not change except for clothing, but the intercepts for most of the products show significant changes over time.

While slopes are stable, the intercepts do show significant changes. There are shifts in the consumption functions in almost all the commodity groups. However, because it is difficult to determine changes in intercepts, we made no attempt to predict shifts in the consumption functions for different products.

Comparison with other Studies

Since none of the past studies undertaken in Pakistan have included household size as an explanatory variable in addition to income or total

[4]The dummy is significant only for 1970-71 in case of cereals and for 1968/69 in case of miscellaneous group. As regards tea, dummy variables are significant for all the years.

expenditure, our estimates are not quite comparable with these studies. Therefore, it is more meaningful to compare results with those for other developing and developed countries, which are reported in table IV.

Inter-country comparison of elasticities should be taken with some reservations because of differences in tastes, and geographical, climatic and cultural conditions. Moreover, elasticities are not available for all comparable commodity groups, especially for sub-food items. Only for 'Nairobi', elasticities are available for most of the comparable commodity groups. While for other countries, elasticities are available (in most cases) for only four broad categories, viz. food, clothing, housing and miscellaneous.

The comparison reveals that elasticities, for almost all commodity groups reported in this study are not substantially different from those for other countries except for clothing and housing. While in most of the other countries expenditure elasticity for clothing exceeds unity and for housing it is less than or equal to unity, in Pakistan, the expenditure elasticity is less than or equal to unity for clothing and greater than unity for housing. This is the major difference and explains the major differences in tastes.

III. Policy Implications and Demand Projections

Analysis of consumer behaviour is important to make future policies concerning production and trade policy. The analysis also provides information on consumer's responsiveness to changes in income, prices, household size and in other factors affecting consumer behaviour.

Table IV

Elasticity Estimates

Commodity Groups.	1 Rural Pakistan (1971-72)		2 Urban Pakistan (1971-72)		3 NAIROBI		4 Urban Malawi		5 Rural Malawi		6 U.S.A.		7 Switzer-land		8 Sweden		9 Germany	
	E_1	E_2	E_1	E_2	E_1	E_2	E_1	E_2	E_1	E_2	E_1	E_2	E_1	E_2	E_1	E_2	E_1	E_2
Cereals.	0.569	0.327	0.16	0.86	0.227	0.525	0.445	0.984	-	-	-	-	-	-	-	-	-	-
Pulses.	0.374	0.546	0.13	0.96	0.022	1.312	-	-	-	-	-	-	-	-	-	-	-	-
Milk & Milk Prod.	0.49	1.197	0.61	0.86	0.493	0.516	1.009	1.060	-	-	-	-	-	-	-	-	-	-
Vegetables.	0.356	0.622	0.43	0.773	0.563	0.512	0.788	0.703	-	-	-	-	-	-	-	-	-	-
Meat, Fish, Poultry.	1.182	0.167	1.048	0.623	0.477	0.499	-	-	-	-	-	-	-	-	-	-	-	-
Edible oil.	0.552	-0.40	0.332	0.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tea.	0.835	0.353	0.737	0.561	0.287	0.583	-	-	-	-	-	-	-	-	-	-	-	-
Total food.	0.705	0.376	0.651	0.43	0.485	0.357	0.766	0.367	0.706	2.44	0.712	0.158	0.46	0.397	0.631	0.311	0.537	0.261
Clothing.	0.944	-0.04	0.787	0.28	1.644	-0.285	0.683	0.574	0.846	1.017	1.435	0.016	1.445	0.044	1.119	0.003	1.493	0.061
Fuel & Lighting.	0.64	0.06	0.603	0.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Housing.	1.27	-0.58	1.429	-0.67	1.076	-0.231	-	-	-	-	0.839	-0.111	-0.824	-0.137	0.803	-0.098	0.913	-0.154
Miscellaneous.	1.47	-0.211	1.41	-0.07	-	-	-	-	-	-	1.561	-0.241	1.879	-0.629	1.446	-0.269	1.604	-0. 358

- = Comparable estimates are not available.

Sources: For Col. 1 consult table II of this study.

For Col. 2 consult table I of this study.

For Col. 3 consult / 15 /

For Col. 4 & 5 , consult / 9 /

For Cols.6 & 9, consult / 8 /

Demand for milk and milk products in rural areas is quite high compared to demand in urban areas which is largely due to very high consumption of butter and desi-ghee, while reverse is the case for edible oil. Per capita consumption of basic necessities is higher in rural areas, viz. wheat, rice, milk and milk products while on the other hand consumption of edible oils and meat, fish, poultry is higher in urban areas. It shows that demand pressure on basic necessities is relatively higher in rural areas. Consequently, in planning the production and supply of these products, we have to consider the urbanization and its effect on demand for different products.

Demand for various products have been projected corresponding to two alternative assumptions. In the first instance, we assume that with the growth in population, number of households increases but the size of household remains the same. Alternatively, we assume that number of the households remains the same, but size of households changes. Of course, neither assumption is completely realistic and correct projection will be somewhere in the middle.

Corresponding to these two assumptions, we have following two relationships:

$$\dot{D}_i = \dot{P} + e_{1i}\dot{g}_c$$

and

$$\dot{D}_i = e_{2i}\dot{P} + e_{1i}\dot{g}_c$$

Where

$\dot{D}_i$ = Projected demand growth rate for ith commodity group

$\dot{P}$ = Population growth rate

e_{1i} = Expenditure elasticity for ith commodity group

e_{2i} = Household size elasticity for ith commodity group

$\dot{g}_c$ = Growth rate of aggregate private consumption expenditure[5]

The projections of consumption made in this study are on the basis of following implicit assumptions:

1) Relative prices remain constant

2) Saving patterns do not change over time

3) Other factors, like education, number of earners per household, tastes, etc. are assumed to be either relatively unimportant or their relationship with the variables being studied remains the same.

Using the two relationships reported above, we have projected demand using alternative growth rates for private consumption expenditure taking population growth rates equal to 4.36% and 2.86% for urban and rural areas respectively. The consumption growth rate, realised during 1969/70 - 1977/78, equalling to 4.7% may be used or alternatively, we may assume private consumption expenditure to grow at a rate of 6.2% as assumed in the Fifth Five Year Plan. However, marginal saving rates assumed in the Fifth Plan are unrealistic. Therefore, we have estimated consumption growth rates corresponding to two different G.N.P. growth rates and their marginal rates of savings, i.e. G.N.P. growth rates of 5% and 7.2% and that of MPS as 15, 20 and 25 percent. Corresponding to these growth rates of G.N.P. and MPS, we have six growth rates of private consumption expenditures, viz. 5.34, 4.07, 2.74, 7.55, 6.25 and 4.9 percent

Projected demand growth rates reported in tables V to VII correspond to the assumption that size of the household remains the same while those reported in tables VIII to X, corresponding to the assumption that number of the households remains the same. It may be seen from these tables that

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[5] g_c is assumed to be same for rural and urban areas. As disaggregated data of private consumption expenditure, for the two areas, are not available.

smaller the population growth rate relative to the consumption growth rate, the more sensitive are the demand growth rates to differences in elasticity estimates for different commodity groups and vice-versa. In all these cases, urban demand growth rates are higher for all commodity groups except for cereals. This might be due to higher population growth rate in urban areas which also includes increase in urbanization. If we assume that the difference in urban and rural population growth rates is equal to the rate of urbanization and calculate demand growth rates for urban areas assuming same population growth rate in urban and rural areas, viz. 2.86%, the demand growth rates are more sensitive to differences in elasticity estimates in urban and rural areas. Rural demand growth rates would be higher relative to urban demand growth rates for all commodity groups except for milk and milk products, vegetables and housing, because in rural areas, expenditure elasticities are higher as compared to the expenditure elasticities in urban areas for all commodity groups except for milk and milk products, vegetables, housing.

Table V

Projected Growth Rates of Consumer Demand (D_i)

$P_u = 4.36$ $R_r = 2.86$

Set-I

Commodity Groups	$g_c = 4.7$			$g_c = 6.2$		
	Rural (D_i)	Urban (D_i)	Weighted* (D_i)	Rural	Urban	Weighted
Cereals	5.53	5.112	5.33	6.39	5.352	5.89
Pulses	4.62	4.97	4.802	5.18	5.16	5.17
Milk & Milk Products	5.16	7.218	6.106	5.9	8.13	6.93
Vegetables	4.53	6.36	5.65	5.07	6.995	6.25
Meat, fish, poultry	8.42	9.29	9.029	10.19	10.86	10.66
Edible Oil	5.45	5.92	5.81	6.28	6.42	6.38
Tea	6.79	7.82	7.43	8.04	8.93	8.6
Total food	6.17	7.42	6.88	7.23	8.396	7.883
Clothing	7.30	8.06	7.73	8.71	9.24	9.017
Fuel & Lighting	5.87	7.19	6.65	6.83	8.10	7.58
Housing	8.82	11.08	10.52	10.72	13.22	12.6
Miscellaneous	9.77	10.99	10.34	11.98	13.10	12.69

*To get weighted demand growth rates, we have used the weights of the relevant commodity in urban and rural family budget.

Table VI

Projected Growth Rates of Consumer Demand

(Set I. GNP growth rate = 5%, MPS=0.15, MPS=0.20 MPS=0.25
g_c=5.34, g_c =4.07, g_c = 2.74)

Commodity groups	g_c=5.34			g_c=4.07			g_c=2.74		
	Rural	Urban	Weighted	Rural	Urban	Weighted	Rural	Urban	Weight
Cereals	5.3	5.21	5.569	5.18	5.01	5.099	4.42	4.8	4.60
Pulses	4.86	5.05	4.949	4.38	4.89	4.643	3.89	4.71	4.32
Milk & Milk Products	5.48	7.61	6.46	4.85	6.84	5.77	4.20	6.03	5.04
Vegetables	4.76	6.63	5.9	4.31	6.09	5.396	3.84	5.53	4.87
Meat, fish, poultry	9.17	9.96	9.723	7.67	8.63	8.342	6.10	7.23	6.89
Edible oil	5.81	6.13	6.056	5.11	5.711	5.572	4.37	5.27	5.06
Tea	7.32	8.30	7.928	6.26	7.36	6.942	5.15	6.38	5.913
Total good exp.	6.63	7.84	7.31	5.73	7.01	6.447	4.79	6.14	5.55
Clothing	7.90	8.56	8.276	6.70	7.56	7.191	5.45	6.52	6.06
Fuel & Lighting	6.28	7.58	7.047	5.47	6.81	6.261	4.61	6.01	5.44
Housing	9.63	11.99	11.403	8.02	10.18	9.64	6.33	8.28	7.793
Miscellaneous	10.72	11.89	11.457	8.85	10.10	9.638	6.89	8.22	7.73

Table VII

Projected Growth Rates of Consumer Demand

Commidity Groups	GNP growth rate = 7.2 (Fifth Plan)								
	MPS =0.15 ε_o =7.551			MPS = 0.20 ε_c = 6.25			MPS = 0.25 ε_c = 4.9		
	Rural	Urban	Weighted	Rural	Urban	Weighted	Rural	Urban	Weighted
Cereals	7.16	5.57	6.397	6.42	5.36	5.91	5.65	5.14	5.41
Pulses	5.68	5.33	5.493	5.2	5.17	5.19	4.69	4.99	4.85
Milk & Milk Prod.	6.56	8.95	7.659	5.92	8.16	6.95	5.26	7.34	6.22
Vegetables	5.55	7.57	6.783	5.09	7.02	6.27	4.60	6.44	5.72
Meat,fish,poultry	11.79	12.27	12.13	10.25	10.91	10.712	8.65	9.5	9.25
Edible Oil	7.03	6.87	6.91	6.31	6.44	6.41	5.57	5.99	5.89
Tea	9.17	9.93	9.65	8.08	8.97	8.631	6.95	7.97	7.58
Total food exp.	8.18	9.28	8.8	7.27	8.43	7.92	6.32	7.55	7.01
Clothing	9.99	10.3	10.17	8.76	9.28	9.06	7.49	8.22	7.91
Fuel & lighting	7.69	8.91	8.41	6.86	8.13	7.61	6.00	7.32	6.78
Housing	12.43	15.15	14.47	10.78	13.29	12.663	9.01	11.36	10.79
Miscellaneous	13.97	15.01	14.63	12.05	13.17	12.76	10.07	11.27	10.83

b/*

Table XIII
Projected Growth Rates of Consumer Demand (D_i)

	g_c = 4.7			g_c = 6.2		
	Rural	Urban	Weighted	Rural	Urban	Weighted
Cereals	3.61	4.50	4.04	4.46	4.74	4.60
Pulses	3.32	4.79	4.09	3.88	4.99	4.46
Milk & Milk prod.	5.73	6.59	6.12	6.46	7.5	6.94
Vegetables	3.45	5.39	4.64	3.99	6.04	5.24
Meat, fish, poultry	6.04	7.64	7.16	7.81	9.21	8.79
Edible oil	1.45	5.28	4.4	2.28	5.78	4.97
Tea	4.94	5.92	5.55	6.19	7.03	6.71
Total food	4.39	4.93	4.7	5.44	5.91	5.71
Clothing	3.35	4.92	4.25	4.77	6.1	5.53
Fuel & Lighting	3.18	4.06	3.7	4.14	4.96	4.13
Housing	4.29	3.82	3.94	6.19	5.96	6.02
Miscellaneous	6.31	6.30	6.31	8.52	8.42	8.46

Table IX

Projected Growth Rates of Consumer Demand

Set II	GNP growth rate = 5%								
	MPS = 0.15 g_c = 5.34			MPS = 0.2 g_c = 4.07			MPS = 0.25 g_c = 3.74		
Commodity groups	Rural	Urban	Weithted	Rural	Urban	Weighted	Rural	Urban	Weighted
Cereals	3.97	4.60	4.28	3.25	4.4	3.80	2.49	4.19	3.31
Pulses	3.56	4.88	4.24	3.08	4.71	3.93	2.59	4.54	3.60
Milk & Milk Prod.	6.04	6.98	6.47	5.42	6.2	5.78	4.77	5.39	5.05
Vegetables	3.68	5.67	4.89	3.23	5.12	4.38	2.75	4.55	3.85
Meat, fish, poultry	6.79	8.31	7.86	5.29	6.98	6.47	3.72	5.59	5.03
Edible oil	1.80	5.49	4.64	1.10	5.07	4.16	0.37	4.63	3.65
Tea	5.47	6.4	6.04	4.41	5.46	5.06	3.3	4.47	4.03
Total food	4.84	5.35	5.13	3.94	4.52	4.27	3.01	3.66	3.37
Clothing	3.96	5.42	4.79	2.76	4.42	3.71	1.50	3.38	2.57
Fuel & lighting	3.59	4.45	4.09	2.78	3.68	3.31	1.93	2.88	2.49
Housing	5.1	4.73	4.83	3.5	2.91	3.06	1.01	1.81	1.21
Miscellaneous	7.25	7.21	7.22	5.38	5.42	5.40	3.54	3.43	3.50

Table X

Projected Growth Rates of Consumer Demand

	G.N.P. Growth Rate = 7.2%								
	MPS= 0.15			MPS= 0.2			MPS= 0.25		
	g_c = 7.551			g_c = 6.25			g_c = 4.9		
Commodity Groups	Rural	Urban	Weighted	Rural	Urban	Weighted	Rural	Urban	Weighted
Cereals	5.23	4.96	5.10	4.49	4.75	4.62	3.72	4.53	4.11
Pulses	4.39	5.16	4.79	3.9	4.99	4.47	3.39	4.82	4.13
Milk & milk Prod.	7.12	8.32	7.67	6.49	7.53	6.97	5.82	6.71	6.23
Vegetable	4.47	6.62	5.78	4.09	6.06	5.28	3.52	5.43	4.72
Meat,fish,poultry	9.40	10.63	10.26	7.87	9.27	8.85	6.27	7.85	7.38
Edible oil	3.02	6.23	5.49	2.31	5.79	4.99	1.56	5.35	4.48
Tea	7.32	8.03	7.76	6.23	7.07	6.75	5.10	6.07	5.70
Total food	6.4	6.79	6.62	5.48	5.94	5.74	4.53	5.06	4.83
Clothing	6.04	7.16	6.68	4.82	6.14	5.57	3.54	5.08	4.421
Fuel & lighting	5.01	5.78	5.46	4.17	4.99	4.66	3.31	4.18	3.82
Housing	7.91	7.89	7.90	6.26	6.03	6.09	4.55	4.10	4.21
Miscellaneous	10.5	10.32	10.39	8.59	8.49	8.53	6.60	6.59	6.59

When we incorporate household size elasticity in addition to the expenditure elasticity, the demand growth rates become very sensitive to differences in consumption growth rate and population growth rate. If population growth is higher relative to consumption growth rate, demand for basic necessities would increase at a higher rate. If consumption growth rate is higher, then the demand for meat, fish, poultry and miscellaneous items increase at a higher rate. .

Moreover, urban demand growth rates are higher for all commodites except for housing and miscellaneous, with different population growth rates. But if we assume the same population growth rates for both rural and urban areas, then the rural demand growth rates are not necessarily higher. It is, therefore, obvious that in order to plan output population growth rates, consumption growth rate, the difference between the two growth rates, and consumer's responsiveness to these changes should be taken into consideration.

These demand projections are subjected to a number of factors ignored in the cross-section analysis and these are important factors affecting consumption behaviour overtime. Monetization, redistribution of income, sources of increased income, and changes in price levels[6] affect consumption behaviour quite significantly and these factors are ignored in cross-section analysis. However, despite these limitations demand projections are quite helpful for making future production and development plans.

IV. CONCLUSIONS

Analysis of urban and rural consumption patterns shows that expenditure elasticities for necessities, viz. cereals, pulses, milk and milk products and others, are lower and household size elasticities are higher and for luxury items, viz. housing, and miscellaneous and others expenditure elasticities are higher and household size elasticities are lower. In some cases household size elasticities are even negative. It is important to note that in case of clothing, housing and fuel and lighting, Engel's law is contradicted by Pakistani data.

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[6]The assumption of constant price level is extremely restrictive as inflation rate, in Pakistan, in 1970 was 7.03, in 1972 it was 9.03 and in 1975 it was 23.13%.

Consumption behaviour of urban and rural households are analysed separately as the covariance analysis suggest different consumption behaviour in urban and rural areas. Although for most of the commodity groups, coefficients of expenditures and household size for urban areas are not significantly different from those for rural areas, but differences in intercepts are highly significant for almost all commodity groups. Similarly, slopes are stable overtime in both rural and urban areas but intercepts in consumption functions shift overtime.

Projected demand growth rates, on the basis of same aggregate consumption growth rate and different population growth rates in urban and rural areas show that these are more sensitive to differences in expenditure elasticities when consumption growth rate is higher than population growth rate and demand growth rates become more sensitive to differences in household size elasticities when population growth rate is higher than consumption growth rate.

These demand growth rates, despite some limitations mentioned above, are helpful in making future production plans and other policies for the growth of the economy. And for this purpose the differences in consumption growth rate and population growth rates and also the consumer responsiveness to changes in these and other factors should be taken into consideration.

Appendix A

Table I

URBAN CONSUMPTION FUNCTIONS

(1971-1972).

Functional Form		I Linear Form			II Log Form		
Commodity Groups		B_{0i}	B_{1i}	B_{2i}	B_{0i}	B_{1i}	B_{2i}
1. Cereals		-4.738	0.0091	7.818	1.352	0.16	0.86
	t	(-2.728)	(5.328)	(22.704)	(15.84)	(4.97)	(12.73)
	R^2	(0.9926)				(0.9956)	
2. Pulses		-0.598	0.0009	0.89	-0.85	0.129	0.96
	t	(-1.615)	(2.339)	(12.099)	(-4.64)	(1.87)	(6.61)
	R^2	(0.9731)			(0.9810)		
3. Milk & Milk products		-15.04	0.044	5.17	-1.673	0.608	0.855
	t	(-4.54)	(13.44)	(7.87)	(-12.91)	(12.44)	(8.36)
	R^2	(0.9866)			(0.9968)		
4. Vegetables		-3.099	0.013	2.153	-1.21	0.43	0.773
	t	(-3.541)	(14.62)	(12.406)	(-6.35)	(5.91)	(5.152)
	R^2	(0.9915)			(0.9886)		
5. Meat, fish, Poultry		-5.623	0.0617	0.24	-4.50	1.048	0.623
	t	(-3.49)	(38.93)	(0.75)	(-20.28)	(12.53)	(3.564)
	R^2	(0.9966)			(0.9947)		
6. Edible oil		-3.781	0.0088	2.604	-0.764	0.332	0.853
	t	(-4.57)	(10.764)	(15.86)	(-5.89)	(6.79)	(8.34)
	R^2	(0.9913)			(0.9939)		
7. Tea		-1.52	0.009	0.542	-3.18	0.74	0.561
	t	(-3.80)	(23.84)	(6.84)	(-33.33)	(17.501)	(6.38)
	R^2	(0.9938)			(0.9976)		
8. Total food expenditure		-36.52	0.249	20.694	0.59	0.651	0.43
	t	(-4.39)	(30.381)	(12.545)	(16.28)	(47.79)	(15.23)
	R^2	(0.9967)			(0.9996)		
9. Clothing		-8.02	0.06	3.52	-1.57	0.787	0.28
	t	(-1.784)	(13.553)	(3.95)	(-14.87)	(19.782)	(3.33)
	R^2	(0.9810)			(0.9974)		
10. Fuel and Lighting		-0.944	0.022	1.96	-1.08	0.603	0.2811
	t	(-1.04)	(24.83)	(10.89)	(-12.73)	(18.77)	(4.19)
	R^2	(0.9953)			(0.9974)		
11. Housing		16.65	0.211	-7.60	-3.41	1.43	-0.666
	t	(1.86)	(23.85)	(-4.27)	(-18.12)	(20.14)	(-4.49)
	R^2	(0.9883)			(0.9948)		
12. Misc.		32.562	0.4622	-19.642	-3.887	1.41	-0.0742
	t	(1.441	(20.781)	(-4.384)	(-33.143)	(31.774)	(-0.8022)
	R^2	(0.9841)			(0.9986)		

d.f = 10

B_{0i} = constant, B_{1i} = coefficient of X_1, B_{2i} = coefficient of X_2

[illegible] , t 0.01 = 3.17

Appendix A

Table II

RURAL CONSUMPTION FUNCTIONS (1971 - 72)

Functional Form		Form I (Linear)			Form II (Log-Linear)		
Commodity Groups		B_{0i}	B_{1i}	B_{2i}	B_{0i}	B_{1i}	B_{2i}
Cereals.		-0.9996	0.0735	5.709	0.233	0.569	0.327
	t	(-0.232)	(6.269)	(5.275)	(1.22)	(8.122)	(2.884)
	R^2	0.9766			0.9955		
Pulses.		0.1062	0.00458	0.5824	-1.477	0.374	0.546
	t	(0.245)	(3.8813)	(5.352)	(3.487)	(2.414)	(2.179)
	R^2	0.9640			0.9748		
Mik & Milk Products.		-20.325	0.0788	6.512	-1.251	0.49	1.197
	t	(4.105)	(5.854)	(5.244)	(2.517)	(2.692)	(4.065)
	R^2	0.9748			0.9882		
Vegetables*		-0.787	0.049	1.404	0.143	0.356	0.622
	t	(7.49)	(2.235)	(2.786)	(1.055)	(2.516)	(3.466)
	R^2	0.99			0.9955		
Meat,Fish, Poultry.		0.323	0.0602	-1.202	-4.783	1.182	0.1675
	t	(0.1654)	(11.327)	(2.451)	(8.402)	(5.667)	(0.497)
	R^2	0.9676			0.9860		
Edible Oil.		4.075	0.0125	-0.447	-0.7996	0.552	-0.40
	t	(3.018)	(3.408)	(2 .321)	(0.6441)	(1.214)	(2.544)
	R^2	0.6637			0.4739		
Tea.		0.022	0.01399	-0.046	-4.083	0.835	0.3532
	t	(0.0248)	(5.876)	(0.2112)	(4.31)	(2.404)	(0.629)
	R^2	0.9171			0.9443		
Total food expenditure.		-20.234	0.336	13.406	0.403	0.705	0.376
	t	(-4 .246)	(25.801)	(11.162)	(4.94)	(23.611)	(7.779)
	R^2	0.9977			0.9994		
Clothing.		0.3003	0.0926	0.656	-1.828	0.944	-0.0379
	t	(0.126)	(14.249)	(1.094)	(7.423)	(10.473)	(0.26)
	R^2	0.9874			0.9949		
Fuel & Lighting.		3.55	0.0295	0.386	-1.032	0.6401	0.0602
	t	(3.741)	(11.442)	(1.621)	(-4.006)	(6.786)	(0.3945)
	R^2	0.9825			0.9896		
Housing.		19.214	0.1706	-7.66	-3.19	1.267	-0.581
	t	(1.513)	(4.942)	(2.405)	(4.198)	(4.554)	(-1.291)
	R^2	0.7769			0.9533		
Miscellan-eous.		-3.11	0.362	-6.45	-3.923	1.471	-0.211
	t	(-0.289)	(12.374)	(-2.391)	(-10.825)	(11.081)	(-0.985)
	R^2	0.9738			0.9948		

d.f. = 10

B_{0i} = constant, B_{1i} = coefficient of X_1 , B_{2i} = coefficient of X_2 .

t 0.05 = 2.23

Appendix A

Table III

ESTIMATION FOR DIFFERENCES WITH DUMMY VARIABLES (URBAN-RURAL 1971-72)
(LOG -LINEAR FORM)

Commodity Groups	BOi	B1i(X_1)	B1i(X_2)	(D_1) (differential intercepts)	1i(D_2X_1) (differential slope(X_1)	2i(D_3X_2) (differential slope(X_2)
	(1)	(2)	(3)	(4)	(5)	(6)
Cereals.	1.352 (17.101)	0.16 (5.3653)	0.857 (13.742)	-1.1191* (-5.0003)	0.4088* (4.969)	-0.53* (-3.82)
Pulses.	-0.8521 (-4.951)	0.13 (1.992)	0.957 (7.052)	-0.625 (-1.282)	0.245 (1.368)	-0.411 (-1.36)
Milk & Milk Prod.	-1.673 (-10.373)	0.6084 (9.9972)	0.855 (6.7202)	0.4221 (0.9244)	-0.1182 (-0.7044)	0.3421 (1.2084)
Vegetable.	-1.209 (-8.523)	0.425 (10.002)	0.773 (5.67)	-1.067 (-2.121)	0.074 (0.4427)	0.151 (0.54)
Meat, fish Poultry.	-4.497 (-22.488)	1.0521 (13.945)	0.6107 (3.874)	-0.288 (-0.5058)	0.1294 (0.6215)	-4.433 (-1.263)
Edible Oil.	-0.764 (-2.22)	0.3321 (2.5597)	0.8527 (3.1448)	-0.0361 (-0.0371)	0.2198 (0.614)	-1.2527* (-2.075)
Tea.	-3.72 (-14.023)	0.737 (7.364)	0.5612 (2.685)	-0.365 (-0.488)	0.0981 (0.355)	0.2081 (-0.4471)
Total Food expenditure.	0.5788 (17.518)	0.651 (51.413)	0.4334 (16.383)	-0.185 (-1.947)	0.0548 (1.562)	-0.0576 (-0.979)
Clothing.	-1.5214 (-13.527)	0.799 (18.828)	0.206 (2.319)	-0.3065 (-0.9627)	0.1435 (1.243)	-0.244 (-1.2338)
Fuel & Lighting.	-1.083 (-11.853)	0.6026 (17.478)	0.2811 (3.902)	0.0512 (0.198)	0.0376 (0.395)	-0.221 (-1.3776)
Housing.	-3.407 (-14.047)	1.429 (15.61)	-0.6658 (-3.482)	0.2172 (0.3164)	-0.1613 (-0.6391)	0.0852 (0.2001)
Miscellaneous.	-3.887 (-30.502)	1.41 (29.242)	0.0742 (0.740)	-0.04 (-0.101)	-0.065 (-0.49)	-0.14 (-0.614)

* : Dummy coefficient significant at 5%.

$D_1 = D_2 = D_3 = 1$ for Rural Sector.

$D_1 = D_2 = D_3 = 0$ for Urban Sector.

Appendix A

Table IV

TEST FOR DIFFERENTIAL INTERCEPTS (URBAN-RURAL 1971-72)

(LOG-LINEAR FORM)

Commodity Groups	$B0i$	$Oi\ D_1$ (differential intercepts)	$B1i\ (X_1)$	$B_{2i}\ (X_2)$
	(1)	(2)	(3)	(4)
Cereals	1.21 (10.026)	0.1673* (8.22)	0.188 (4.3641)	0.851 (10.300)
Pulses.	-0.9204 (-5.66)	-0.0101 (-0.37)	0.1632 (2.804)	0.8863 (7.9321)
Milk & Milk Products.	-1.666 (10.403)	0.367* (13.526)	0.564 (9.834)	0.996 (9.052)
Vegetables.	-0.663 (-1.361)	-0.97* (-11.733)	0.536 (3.076)	0.134 (0.3994)
Meat, Fish, Poultry.	-4.492 (-21.766)	-0.3415* (-9.7714)	1.1142 (15.086)	0.4063 (2.8662)
Edible Oil	-2.118 (-1.71)	0.1151 (0.549)	0.8793 (1.983)	-0.329 (-0.387)
Tea.	-3.74 (-15.47)	-0.1915* (-4.678)	0.7599 (8.784)	0.4982 (3.00)
Total Food expenditure.	0.566 (16.288)	0.0087 (1.477)	0.652 (52.446)	0.443 (18.547)
Clothing.	-1.6041 (-16.372)	0.0503 (3.0321)	0.82 (23.362)	0.193 (2.863)
Fuel & Lighting.	-1.065 (-10.007)	0.12* (6.63)	0.639 (16.781)	0.153 (2.088)
Housing.	-3.33 (-14.284)	-0.499 (-12.642)	1.4417 (17.302)	-0.755 (4.722)
Miscellaneous.	-3.90 (33.502)	0.0785 (3.983)	1.421 (34.097)	-0.115 (-1.432)

* : Dummy coefficients are significant at 5% and 1%.

D_1 = 1 For Rural Sector.

D_1 = 0 For Urban Sector.

Appendix A

Table V

TEST FOR DIFFERENCES OVER-TIME (1968/69-1971/72) WITH DUMMY VARIABLES.

URBAN AREAS

Commodity Groups.	B_0 1971-72	differential intercepts D_1 1970-71	D_2 1969-70	D_3 1968-69	$B_1(X_1)$ 1971-72	differential Slope(X_1) D_4 1970-71	D_5 1969-70	D_6 1968-69	$B_2(X_2)$ 1971-72	differential Slope (X_2) D_7 1970-71	D_8 1969-70	D_9 1968-69
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Cereals.	1.352 (17.298)	0.54 (4.573)	0.2302 (2.093)	0.211 (1.871)	0.1601 (5. 43)	-0.132* (-2.971)	-0.01981 (-0.485)	0.0134 (0.2954)	0.8564 (13.898)	0.138 (1.514)	-0.0571 (-0.66)	-0.1491 (-1.499)
Pulses.	-0.85 (-6.44)	0.287 (1.44)	0.174 (0.935)	0.22 (1.161)	0.129 (2.59)	-0.0342 (-0.457)	-0.014 (-0.1995)	-0.0166 (-0.217)	0.958 (9.201)	-0.061 (-0.394)	-0.014 (-0.092)	-0.0315 (-0.187)
Milk & Milk Products.	-1.673 (-14.56)	-0.0303 (-0.174)	-0.141 (-0.873)	-0.06 (-0.354)	0.609 (14.036)	0.0396 (0.608)	0.0121 (0.201)	-0.047 (-0.705)	0.8541 (9.43)	-0.112 (-0.833)	0.065 (0.51)	0.181 (1.235)
Vegetables.	-1.21 (-2.32)	1.479 (1.0094)	1.0962 (0.8029)	0.781 (0.558)	0.43 (2.73)	-0.758 (-1.379)	-0.612 (-1.21)	-0.501 (-0.891)	0.773 (0.832)	1.693 (1.492)	1.415 (1.314)	1.223 (0.991)
Meat,fish, Poultry.	-4.497 (-29.506)	0.0796 (0.346)	0.234 (1.091)	0.0613 (0.279)	1.052 (18.295)	0.0544 (0.6301)	-0.006 (-0.0692)	0.019 (0.213)	0.611 (5.09)	-0.2302 (-1.292)	-0.091 (-0.535)	-0.152 (-0.784)
Edible oil.	-0.763 (-4.92)	0.5110 (2.179)	0.336 (1.536)	0.1262 (0.5633)	0.332 (5.67)	-0.0995 (-1.132)	-0.043 (-0.528)	0.004 (0.044)	0.853 (6.97)	0.036 (0.1975)	-0.052 (-0.302)	-0.131 (-0.661)
Tea.	-3.72 (24.534)	0.6441 (2.814)	0.7322 (3.432)	0.417 (1.904)	0.737 (12.89)	-0.218* (-2.543)	-0.18** (-2.263)	-0.247* (-2.81)	0.56 (4.69)	0.37 ** (2.09)	0.188 (1.12)	0.573 * (2.971)
Total food expenditure.	0.588 (13.231)	0.1103 (1.643)	0.12 (1.89)	-0.011 (-0.17)	0.651 (38.829)	-0.0299 (1.186)	-0.029 (-1.243)	0.01 (0.385)	0.433 (12.371)	0.022 (0.43)	0.024 (0.493)	-0.025 (-0.45)

Contd.....P/2.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Clothing.	-1.57 (-2.72)	-0.0462 (-0.053)	-0.334 (-0.411)	-0.57 (-0.68)	0.787 (3.62)	0.215 (0.657)	0.0964 (0.32)	0.181 (0.541)	0.277 (0.609)	-0.715 (-1.06)	-0.11 (-0.165)	0.271 (-0.37)
Fuel & Lighting.	-1.083 (-14.21)	-0.065 (-0.566)	0.0078 (0.072)	0.0318 (0.289)	0.603 (20.958)	0.0245 (0.568)	-0.002 (-0.0492)	-0.033 (-0.74)	0.281 (4.674)	-0.0611 (-0.685)	-0.023 (-0.28)	0.048 (0.4931)
Housing.	-3.41 (-15.52)	0.0943 (0.285)	-0.11 (-0.341)	0.0813 (0.26)	1.429 (17.245)	-0.081 (-0.651)	-0.068 (-0.591)	-0.093 (-0.73)	-0.67 (-3.85)	0.21 (0.8001)	0.26 (1.064)	0.224 (0.801)
Miscellaneous.	-3.89 (-38.034)	0.034 (0.213)	0.054 (0.37)	0.046 (0.31)	1.406 (36.464)	-0.0059 (-0.102)	-0.011 (-0.198)	-0.104 (-1.752) **	-0.074 (-0.921)	0.016 (0.131)	0.019 (0.165)	0.31 (2.38) **

D.F = 40

* : Slope differentials significant at 0.05% and at 0.01%.

** : Slope differentials significant at 0.05% only.

Appendix A

Table VI

TEST FO DIFFERENTIAL INTERCEPTS OVER-TIME (1968/69 - 1971/72)

URBAN AREAS (LOG . FORM)

Commodity Groups.	B_0 1971-72	differential inte cepts D_1 1970-71	D_2 1969-70	D_3 1968-69	pooled $B_1(X_1)$ 1968/69 - 1971-72	pooled $B_2(X_2)$ 1968/69 - 1971-72
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cereals	1.567 (31.761)	0.032 (2.811)*	0.211 (1.858)**	0.032 (2.83)*	0.1254 (6.65)	0.846 (21.0.1)
Pulses	-0.72 (-10.565)	-0.0096 (-0.62)	0.071 4.531)*	0.073 (4.663)*	0.114 (4.399)	0.93 (16.761)
Milk & Milk Prod.	-1.742 (28.08)	0.0051 (0.36)	0.0361 (2.532)*	-0.016 (-1.16)	0.617 (25.993)	0.867 (17.13)
Vegetables.	-1.53 (-3.16)	0.114 (1.034)	0.081 (0.728)	0.068 (0.617)	0.551 (2.99)	0.3972 (1.01)
Meat, fish, Poultry.	-4.38 (-56.027)	-0.0082 (-0.461)	0.045 (2.483)*	-0.095 (-5.302)*	1.064 (35.587)	0.506 (7.92)
Edible oil.	-0.511 (-6.209)	0.0086 (0.457)	0.0043 (0.227)	-0.076 (-4.02)*	0.297 (9.433)	0.822 (12.234)
Tea.	-3.325 (-36.31)	0.048 (2.29)**	0.0503 (2.327)**	0.0068 (0.323)	0.592 (16.901)	0.806 (10.781)
Total food expenditure	0.646 (27.107)	-0.02 (-3.703)*	-0.004 (-0.635)	0.002 (0.319)	0.639 (70.134)	0.44 (22.597)
Clothing.	-1.788 (-6.16)	-0.053 (-0.806)	0.0154 (0.23)	-0.0201 (-0.301)	0.914 (8.234)	-0.0095 (-0.0399
Fuel & lighting.	-1.052 (-27.902)	-0.031 (-3.597)*	-0.043 (4.95)*	-0.0705 (-8.151)*	0.6001 (41.65)	0.271 (8.8)
Housing.	-3.37 (-30.894)	-0.0074 (-0.298)	-0.044 (-1.751)**	-0.0541 (-2.164)**	1.372 (32.914)	-0.504 (-5.67)
Miscella-neous	-3.876 (-70.84)	0.0297 (2.381)**	0.0292 (2.321)**	-0.0121 (-0.965)	1.3853 (66.209)	-0.014 (-0.308)

D.F = 46

* = dummy coefficients significant at 0.05 % and at 0.01%

**= " " " only.

Appendix A

Table VII

TEST FOR DIFFERENCES OVER-TIME (1968/69 - 1971/72) WITH DUMMY VARIABLES.

RURAL AREAS

Commodity Groups.	differential intercepts					differential Slope(X)				Differential Slope (X)		
	B_0 1971-72	D_1 (1970-71)	D_2 (1969-70)	D_3 (1968-69)	B_1 $(X)_1$ 1971-72	D_4 (1970-71)	D5 (1969-70)	D_6 (1968-69)	B_2 (X_2) 1971-72	D_7 (1970-71)	D_8 (1969-70)	D_9 (1968
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Cereals.	0.233 (0.6323)	0.3373 (0.6243)	0.717 (1.25)	0.497 (0.9023)	0.569 (4.222)	-0.115 (-0.603)	-0.255 (-0.699)	-0.136 (-0.659)	0.33 (1.498)	0.151 (0.498)	0.3714 (1.01)	0.122 (0.356
Pulses.	-1.42 (-4.02)	0.402 (0.747)	0.157 (0.274)	0.092 (0.168)	0.373 (2.77)	-0.153 (-0.804)	-0.053 (-0.243)	0.0674 (0.33)	0.55 (2.53)	0.262 (0.887)	0.087 (0.237)	-0.22 (-0.65)
Milk & Milk Products.	-1.252 (-2.835)	0.123 (0.1894)	0.193 (0.2802)	-0.239 (-0.362)	0.491 (3.034)	0.0576 (0.251)	-0.115 (-0.441)	0.156 (0.632)	1.196 (1.574)	-0.194 (-0.533)	0.298 (0.676)	-0.31 (-0.763
Vegetables.	0.143 (1.99)	-0.452 (-0.625)	0.127 (+0.1651)	-0.305 (-0.414)	0.356 (2.31)	0.127 (0.498)	-0.0971 (-.33)	0.074 (0.268)	0.622 (1.791)	-0.1822 (-0.45)	0.184 (0.373)	-0.12 (-0.27
Meat, fish, Poultry.	-4.78 (-7.06)	+0.035 (0.0356)	0.599 (0.567)	-0.31 (-0.304)	1.18 (4.76)	-0.034 (-0.0971)	-0.165 (-0.41)	0.123 (0.324)	0.17 (0.431)	0.1198 (0.215)	0.1801 (0.266)	-0.25 (-0.40
Edible oil	-0.801 (-3.57)	1.05 (0.508)	1.827 (0.833)	1.322 (0.6281)	0.551 (1.071)	-0.328 (-0.45)	-0.604 (-0.725)	-0.62 (-0.79)	-0.397 (-0.476)	0.351 (0.303)	0.73 (0.519)	0.948 (0.724
Tea.	-4.09 (-5.98)	0.896 (0.893)	1.31 (1.225)	-0.495 (-0.484)	0.837 (3.34)	-0.252 (-0.71)	-0.396 (-0.98)	0.262 (0.684)	0.35 (0.865)	0.27 (0.473)	0.502 (0.734)	-0.55 (-0.86
Total food expenditure.	0.402 (2.45)	0.223 (0.924)	0.38 (1.481)	-0.103 (-0.42)	0.706 (11.734)	-0.077 (-0.896)	-0.136 (-1.496)	0.055 (0.599)	0.376 (3.87)	0.107 (0.791)	0.234 (0.424)	-0.10 (-0.7
Clothing.	-1.83 (-7.76)	0.6804 (1.97)	0.61 (0.438)	0.765 (2.171)	0.944 (10.947)	-0.25 (-2.014)**	-0.051 (-0.37	-0.26 (-1.94)**	-0.038 (0.271)	0.395 (2.04)**	0.073 (0.31)	-0.344 (1.5

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12	(13)
Fueal & Lighting.	-1.031 (-2.653)	0.3262 (1.622)	0.934 (1.54)	0.5423 (0.933)	0.64 (4.495)	-0.342 (-1.69)**	-0.33 (1.43)	-0.247 (-1.135)	0.0602 (0.2614)	0.572 (1.79)**	0.476 (1.224)	0.[illegible] (1.19)
Housing.	-3.19 (-2.89)	-0.0825 (0.051)	-1.37 (-0.795)	0.019 (0.0114)	1.27 (3.13)	0.0123 (0.0215)	0.4094 (0.626)	-0.028 (-0.046)	-0.58 (-0.89)	0.038 (0.042)	-0.42 (-0.38)	0.062 (0.06)
Miscellance.	-3.923 (-6.99)	-1.10 (-1.33)	-0.811 (-0.93)	-0.82 (-0.98)	1.471 (7.15)	0.39 (1.33)	0.525 (0.977)	0.152 (0.484)	-0.211 (-0.64)	-0.57 (-1.231)	-0.56 (-0.995)	-0.019 (-0.036

D. F. = 37

* = Slope differential significant at 0.05% and at 0.01%
** = " " " " 0.05% only.

Appendix A

Table VIII

TEST FOR DIFFERENTIAL INTERCEPTS OVER - TIME (1968/69 - 1971/72)

RURAL AREAS (LOG - FORM)

Commodity Groups	B_0 1971-72	differential intercepts $0iD_1$ 1970-71	$1iD_2$ 1969-70	$2iD_3$ 1968-69	Pooled $B_1(X_1)$ 1968/69-1971/72	Pooled $B_2(X_2)$ 1968/69 1971/72
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cereals.	0.63 (3.36)	-0.0212 (-1.01)	-0.018 (-0.88)	-0.016 (-0.801)	0.45 (6.43)	0.48 (4.19)
Pulses.	-1.3 (-6.83)	0.018 (0.855)	0.022 (1.05)	0.086 (4.096)*	0.32 (4.47)	0.622 (5.331)
Milk & Milk Products.	-1.38 (-5.91)	0.11 (4.024)*	0.065 (2.501)*	0.067* (2.61)	0.552 (6.36)	1.077 (7.55)
Vegetables.	-1.083 (-4.48)	-0.0757 (-2. 764)*	-0.0893* (-3.332)	-0.12 (-4.508)*	0.451 (4.998)	0.471 (3.182)
Meat, Fish, Poultry.	-4.634 (-13.703)	0.052 (1.345)	0.025 (0.657)	-0.072** (-1.93)	1.132 (8.98)	0.234 (1.129)
Edible Oil.	0.342 (4.884)	-0.097 (-1.221)	-0.16 ** (-2.06)	-0.383* (-4.95)	0.193 (0.738)	0.055 (0.127)
Tea.	-3.66 (-10.384)	-0.008 (-0.193)	0.028 (0.71)	-0.015 (-0.374)	0.7351 (5.596)	0.42 (1.93)
Total Food expenditure.	0.52 (6.065)	-0.006 (-0.628)	0.007 (-0.71)	0.014 (1.46)	0.67 (21.101)	0.43 (8.204)
Clothing.	-1.42 (-10.982)	0.028** (1.91)	+0.0196 (1.372)	-0.0181 (-1.27)	0.7961 (16.558)	0.183 (2.334)
Fuel & Lighting.	-0.44 (-2.172)	0.0672* (2.93)	-0.009 (-0.4012)	-0.0443** (-1.981)	0.411 (5.441)	0.431 (3.472)
Housing.	-3.597 (-6.497)	0.0414 (0.66)	0.111** (1.81)	-0.0293 (-0.479)	1.371 (6.642)	-0.67 (-1.97)
Miscellaneous.	-4.59 (-15.329)	0.011 (0.32)	-0.018 (-0.54)	-0.054 (-1.627)	1.689 (15.135)	-0.51 (-2.753)

D.F = 43

* : Dummy coefficients significant at 0.05% and 0.01%.

** : Dummy coefficients significant at 0.05% only.

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